

Technical Drafting 4-23-08

Rationale Statement: People with careers in design and pre-construction create our future.. Their plans guide manufacturing professionals as they continue the building process. Students are introduced to tools and methods used by a skilled drafts person and engineers.

Suggested Grade Level: 9-12

Topics Covered:

- Concepts of drafting
- Proper tools and safety
- Orthographic projections
- Geometric construction
- Sectional views
- Fasteners
- Simple CAD applications
- Math and Reading skills

Core Technical Standards & Examples

1. Examine basic drafting fundamentals and technical skills

**Bloom's Taxonomy
Level**

Standard and Examples

TD1.1. Define basic drafting tools and techniques used on technical drawings

Knowledge

Examples:

- * Show proper lettering techniques on drawings
- * Define and use the alphabet of lines on various drawings
- * Identify line symbols recommended by ANSI
- * Show manual drafting techniques on ANSI standard paper.

TD1.2. Integrate geometric construction for technical drafting

Synthesis

Examples:

- * Create the basic geometric shapes using manual drafting tools
- * Combine various drafting tools to define angles and directions

TD1.3. Define dimensioning styles and techniques on metric and imperial drawings

Knowledge

Examples:

- * Label measurements, notes, and symbols to orthographic views
- * Show dimensions on an isometric drawing
- * Show a drawing using metric or imperial units
- * Identify ANSI standards for dimensioning and notes

TD1.4. Demonstrate various drawing scales used in technical drafting

Application	Examples: <ul style="list-style-type: none">* Reduce a drawing by scaling down to fit on assigned paper size* Calculate a metric drawing into imperial dimensions* Convert a drawing with fractions into decimal equivalents
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TD1.5. Identify proper terminology and examine career possibilities

Analysis	Examples: <ul style="list-style-type: none">* Prepare a report about the area of study* Design a questionnaire for an interview.* Write a biography about a historic person in the field.
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2. Apply drawing techniques to produce various technical plans

Bloom's Taxonomy Level

Standard and Examples

TD2.1. Create multi-view and orthographic projections

Synthesis	Examples: <ul style="list-style-type: none">* Design top, front, and right side views of an object* Integrate proper dimensioning techniques on a 2D drawing* Formulate the number of views needed to fully describe an object
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TD2.2. Illustrate isometric and pictorial drawings

Application	Examples: <ul style="list-style-type: none">* Complete one and two point perspectives of a house* Show renderings on a pictorial drawing* Complete an isometric from a multi-view drawing
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TD2.3. Create sectional views and conventions

Synthesis	Examples: <ul style="list-style-type: none">* Create ribs, webs, and fasteners with a through cutting plane.* Design the various views of a section using assigned cutting planes* Combine conventional breaks and symbols on a drawing
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TD2.4. Demonstrate various threads and fasteners used in design.

Application	Examples: <ul style="list-style-type: none">* Apply the standard and metric thread classifications to various plans* Show detailed, schematic, and simplified thread representations* Classify common thread terms on a technical drawing.
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TD2.5. Integrate various drawings to create a detailed assembly.

Synthesis	Examples: <ul style="list-style-type: none">* Create an assembly drawing and apply various ANSI standards* Compose a title block for drawings incorporating standard information
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- * Formulate a standard bill of materials of a simple project.

3. Analyze and implement computer aided software in technical design

Bloom's Taxonomy Level

Standard and Examples

TD3.1. Compare computer aided software used in technical design

Analysis

Examples:

- * Analyze various types of CAD software
- * Explain benefits of design using CAD
- * Select a software to best fit the needs of design

TD3.2. Apply Cad software in technical design

Application

Examples:

- * Show basic orthographic projections using CAD
- * Illustrate 3-D modeling of an object
- * Complete assembly drawings of multi-part projects